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Control of Vaccine Preventable Diseases Update, 2006

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Something new is always happening with vaccine preventable diseases (VPDs). This newsletter reviews surveillance for several important VPDs and includes information on the use of "surveillance indicators" in VPD surveillance, as well as recommendations for the use of two new vaccines.

VPD Surveillance

At its simplest definition, surveillance is the gathering of information you plan to act on. As VPDs become less common, with dramatic decreases in incidences for most VPDs compared with the pre-vaccine era, it becomes more difficult to know if surveillance data are adequate. When there are very few or no cases of a disease, the surveillance data must be very complete to assure that surveillance is able to identify cases when they do occur.

One approach to improving surveillance for VPDs is through assessing specific surveillance indicators for a disease. Surveillance indicators are measures to monitor the quality of surveillance. These measures may include: measures of surveillance infrastructure, timeliness of notification, adequacy of case investigation, and timeliness of laboratory testing. Surveillance indicators monitor the quality of a surveillance system by documenting that the system is sensitive enough to identify all cases that occur and specific enough to exclude non-cases.

Surveillance indicators are currently available for measles, rubella, H. influenza type b and pertussis, and are under development for mumps, varicella (chickenpox), and invasive meningococcal disease.

Measles and rubella are VPDs which have been greatly controlled in the United States. Measles remains common elsewhere in the world and can easily be reintroduced by a traveler. In 2005, two measles cases were diagnosed in Washington state, one an immigrant from eastern Europe and the other a Washington resident who attended a conference in Europe. One rubella case was also identified in a local resident with travel to the Middle East. During early 2006, measles outbreaks have occurred in Spain, Sweden, Denmark, Kenya, Venezuela, and Ukraine and possibly other countries. Identifying and completely investigating every case of measles and rubella is important to controlling and eliminating the diseases in the USA.

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Washington State Department of Health

*epi*TRENDS
P.O. Box 47812
Olympia, WA 98504-7812

Mary C. Selecky
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Jo Hofmann, MD
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Deborah Todd, RN, MPH
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Scientific Editor

Surveillance indicators for measles and rubella are:

- Completeness of data (measured by demographics, age, vaccine history, onset)
- Timeliness of reporting
- Proportion of reported cases that have laboratory confirmation
- Proportion of "chains of transmission" with an identified source
- Proportion of "chains of transmission" having an imported source
- For measles in addition: proportion of "chains of transmission" having a specimen submitted for viral isolation
- For rubella in addition: proportion of cases in women of child-bearing age with pregnancy status known

Viral isolation is essential for tracking the molecular epidemiology of a disease such as measles such as situations when an index case cannot be identified. In addition, viral isolation allows linkage of sporadic cases to importations and is the only diagnostic method that can differentiate between wild type virus and vaccine virus for a case patient who was recently vaccinated. Specimens for viral isolation (nasal wash and urine) should be collected on every sporadic measles or rubella cases as well as from at least one (or more) cases from each measles or rubella outbreak. These specimens should be obtained at the time of initial investigation, not after the serology results are received.

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Haemophilus influenzae type b (Hib) is a recent vaccination success story. From 319 cases and 11 deaths in the pre-vaccine year of 1986, the disease has essentially disappeared. As Hib becomes less common, it is increasingly important to report pediatric non-type b *H. influenzae* cases to confirm that surveillance for Hib is complete.

Surveillance indicators for Hib are:

- Timeliness of reporting
- Completeness of information on cases less than 5 years of age
- Completeness of vaccine history
- Completeness of serotype information
- Incidence of non-type b disease

The expected rate of non-type b is 1-2/100,000 persons per year. When no cases of non-b are reported, that may signal surveillance for Hib type b may not be adequate.

Rates of pertussis remain high in Washington. In 2003 through 2004 the rate of pertussis was about 14/100,000 in Washington compared to the national rate of 4/100,000 in 2003. The state continued to have elevated numbers of cases in 2005.

Surveillance indicators for pertussis are:

- Completeness of data including vaccination history and clinical data, such as duration of cough, used to determine if case definition is met
- Proportion of cases that are laboratory confirmed or epi-linked to a laboratory confirmed case

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Pertussis vaccine history information now should be collected for all cases, not just children. This is particularly important because there is a new pertussis vaccine recommended for a new population. When possible include the type of vaccine administered along with the vaccine manufacturer and lot number.

New Vaccines

The Advisory Committee on Immunization Practices (ACIP) has issued recommendations for new pertussis and meningococcal vaccines.

The new pertussis vaccine is Tdap which includes tetanus toxoid, reduced diphtheria toxoid, and reduced acellular pertussis vaccine. Two products are licensed, Boostrix™ (GlaxoSmithKline) licensed May 2005 for persons 10-18 years of age and Adacel™ (sanofi pasteur) licensed June 2005 for those 11-64 years of age. February 2006 ACIP issued recommendations for Tdap vaccine use in adolescents. Tdap should be given to children aged 11-12 years instead of Td and those ages 13-18 years who missed their Td booster. In addition there are the following provisional recommendations for adult use:

• Adults 19-64 years of age: single dose of Adacel™ to replace the next booster dose of Td.
• Adult contacts of infants <12 months of age: ideally they should receive Tdap at least one month before the beginning of close contact with the infant. This includes any woman who might become pregnant.
• Women: receive a dose of Tdap immediately post-partum if they have not previously received the vaccine
• Health-care personnel who work in hospitals or ambulatory care centers and have direct patient contact: should receive Tdap with priority given to personnel having direct contact with infants aged <12 months.

The meningococcal conjugate vaccine Menactra™ (sanofi pasteur) also known as MCV4 has been licensed for persons 11-55 years of age. ACIP recommends routine vaccination of adolescents 11-12 years of age. In addition, vaccination is recommended for:

• Those age 15 if not previously vaccinated
• College freshmen who will be living in dorms
• Others at increased risk including military recruits, international travelers to endemic areas, persons with medical conditions that increase risk for meningococcal infection (terminal complement deficiencies or splenic dysfunction), and lab personnel

Chas DeBolt is the vaccine preventable disease epidemiologist at DOH Communicable Disease Epidemiology and is available for assistanc with diagnosis or control of vaccine preventable conditions (chas.debolt@doh.wa.gov; 206-418-5500). Other sources of information are:

• ACIP provisional recommendations for adults
http://www.cdc.gov/nip/vaccine/tdap/tdap_adult_recs.pdf
• ACIP recommendations for adolescents
http://www.cdc.gov/mmwr/preview/mmwrhtml/rr55e223a1.htm?s_cid=rr55e223a1_e
• Washington State Department of Health communicable disease data
http://www.doh.wa.gov/notify/list.htm